



Agenda Item 7: Planning for SWIM Implementation

AIM SUBJECTS DISCUSSED IN THE SAM IMPLEMENTATION GROUP

(Presented by the Secretariat)

SUMMARY	
This working paper presents the subjects related to AIM discussed in the SAM Implementation Group (SAM/IG).	
REFERENCES	
<ul style="list-style-type: none">• Report of the Twenty-second workshop/meeting of the SAM implementation group (SAM/IG/22) (Lima, Peru, 19-23 November 2018); and• Report of the Twenty-third workshop/meeting of the SAM implementation group (SAM/IG/23) (Lima, Peru, 20-24 May 2019)	
ICAO strategic objectives:	<i>A - Safety</i> <i>B - Air navigation capacity and efficiency</i> <i>E - Environmental protection</i>

1. Background

1.1 In the SAM Region, the implementation of aspects related to air navigation is accomplished through the SAM/IG meetings, which are conducted twice a year. The last SAM/IG meeting (SAM/IG/23) was held in May 2019. At SAM/IG meetings, experts from different aeronautical disciplines involved in the topics of the agenda prepare action plans, support and follow up the implementation of systems, services, and procedures with a view to improving the efficiency and capacity of air navigation in the SAM Region, while maintaining high safety standards.

1.2 SAM/IG meetings respond mainly to the following regional implementation requirements related to the Global Air Navigation Plan (GANP) and the SAM Performance-Based Air Navigation Implementation Plan (PBIP):

- a) transition from ground-based air traffic management to performance-based management (PBN);
- b) improvements for balancing air traffic demand and capacity (ATFM);
- c) assessment of operational requirements in order to identify communication, navigation and surveillance improvements for en-route and terminal area operations; and
- d) operational implementation of new automated ATM systems and integration of the existing ones.

1.3 Each of the aforementioned requirements is being addressed by working groups made up by experts in the area (Route optimisation group, ATFM Group, CNS Group, and Automation Group). At SAM/IG meetings, there are plenary sessions with the participation of all the groups, and individual sessions by group.

1.4 The AGA, AIM, and MET areas have their own regional forums, and when the implementation requires the participation of more than one air navigation area, the SAM/IG becomes the relevant forum, and the agenda is adjusted accordingly.

2. Discussion

2.1 The main subjects related to AIM area discussed in the last SAM/IG meetings were:

- Mitigation of errors in the flight planes;
- Interoperability Task Group (Interop TG); and
- Migration of AFTN users to the AMHS environment and new message formats.

ERRORS MITIGATION OF FLIGHT PLANS IN THE SAM REGION

2.2 Errors and duplicity/multiplicity of flight plans impose restrictions to the automated process and the correct establishment of AIDC between adjacent centres in the SAM Region. In this sense and since 2009, the SAM Region States are working on various initiatives to mitigate the problem.

2.3 The Meeting took note of the progress made by the States regarding actions to mitigate errors and the duplication/multiplicity of flight plans. The updated information is detailed below.

Argentina

2.4 ARO offices are being centralized with unique addresses for reception of FPL in each ACC of Argentina, which must be completed by the end of 2020, in order to adapt to the Conclusion SAM/IG/19-2 - *Implementation of procedure for the mitigation of duplication/multiplicity of regular commercial flight plans*. Currently, the FPL is sent only to the Flight Plan Offices, either physically or electronically. Agreements are being signed with the airlines to submit FPL electronically to the ARO/AIS terminals.

2.5 The Flight System Repairs positions of the ATM Systems have been transferred to the ARO / AIS offices. The ARO / AIS staff is now responsible for reviewing and repairing the FPL. The FDP position is now operated by ARO/AIS personnel from those offices.

Bolivia

2.6 Flight plans are currently being presented in physical format (paper). However, there have been no reports of duplicity/multiplicity problems of FPL. Bolivia is in the process of implementing an automated ATM system. It is planned to implement a facility to enter flight plans online, via the internet, and via a mobile application for cell phones.

Brazil

2.7 At the beginning of 2018, the centralization of all flight plans in the CGNA (Air Navigation Management Center) was initiated through the SIGMA system - Integrated Air Traffic Management System, which will provide this information to the systems automated systems of the ACC (Sagittarius) and Control Towers (TATIC). That implementation is planned in 3 phases:

- a) Phase 1: In execution 2019
 - Replacement of SIGMA system hardware equipment, improving robustness, redundancy and contingency management;
 - Adoption of a single address - SBRJZPX - to be used by SIGMA;
 - Adoption of alphanumeric code that makes it possible to identify only and exclusively each flight intention;
 - Availability of statistical reports;
 - Presentation of feedback messages for users, with the status of their flight intentions.

- b) Phase 2: 2020
 - Synchronization of the databases of SIGMA and SAGITARIO systems;
 - SIGMA interoperability (GEA) with the AIM-BR system, for automatic updating of its database; and
 - Consolidation of C-AIS CGNA.

- c) Phase 3: 2021
 - Unification of the databases of SIGMA, SAGITARIO and TATIC systems;
 - Presentation of feedback messages for users, based on the recording of flight plans in the databases of the ATC bodies (APP, TWR).

2.8 It is planned to have the new system installed in the Recife FIR by the end of 2019 to carry out parallel tests, and have it integrated and operational nationwide by first semester of 2020.

2.9 In addition, Brazil put into service in November 2018 the PCICEA platform developed by ATECH for the exchange of FPL data between DECEA Rio de Janeiro and EUROCONTROL Brussels. This platform incorporates the SWIM concept.

Chile

2.10 Has made contact with airlines to minimize errors in the generation of flight plans, having succeeded in significantly reducing the duplicity/multiplicity of FPL. The internal addressing structure is being revised to avoid multiplicity of flight plans and the study for the implementation of the national center for the reception of the flight plans has begun.

Colombia

2.11 Meetings were held with air operators (Avianca, LATAM, Spirit, Viva Colombia, Iberia) in October 2017 on procedures to present flight plans in the international AIS Offices and not directly in the ACCs, in order to avoid duplicity of flight plans. In this regard, drafts have been prepared for the MOUs with these airlines.

2.12 For the 2019 period, the acquisition of an automated IFPS system for the processing of FPL is planned.

Ecuador

2.13 The SAM/IG/19 meeting considered that, in order to implement procedures to mitigate the duplication/multiplicity of commercial scheduled flight plans, States should use AFTN XXXXZPZX as the only address for receiving flight plans corresponding to ARO/AIS offices. Initial tests with this procedure encountered problems because the manual addressing and transmission to ATS automated systems gave rise to duplicated flight plans.

2.14 To reduce the risk of manual errors, reference is made to DOC 4444, paragraph 11.2.1.1.1, which states that ANSPs can implement local agreements that delegate responsibility to operators for the direct transmission of movement messages to through the Fixed Aeronautical Telecommunications Network (AMHS).

2.15 On November 15, 2018, the Letter of Operational Agreement between the company JETBLUE and the General Directorate of Civil Aviation of Ecuador was signed to accept the direct submission via AMHS of the FPL from its dispatch center in the USA to the ATS systems.

2.16 There is currently a request from 15 airlines interested in the direct presentation of the flight plan and movement messages, so an AIC is being developed that indicates the guidelines and conditions for this procedure.

Guyana

2.17 A centralized AFTN address has been established for the reception of FPL (SYCJZPZX for Flight Plans, SYCJYNYX for NOTAM, and SYCJYMYX). Flight Plans can be presented in electronic and physical format (paper). All FPLs are received by the AID office (SYCJZPZX).

Panama

2.18 Although initially Panama decided that the airlines (mainly Copa) stop sending their FPL directly to the automated systems and, on the contrary, they present themselves through the ARO/AIS office, the possibility is being analyzed of resuming the way so that the airlines are responsible for sending the FPL directly to the direction of the FDP, delegating this responsibility. It is expected that this will mitigate the duplication/multiplicity problems of FPL.

2.19 Copa is currently sending its FPL directly to the FDP address, and Iberia has indicated its intention to avail itself of this procedure. The Letters of Operational Agreement with these airlines are being prepared to formalize the procedure.

Paraguay

2.20 Reception of duplicate flight plans continues. An operational instruction was made for the personnel in charge of the repair of FPL, in regard to the treatment of the duplicated FPLs. There were conversations with some airline dispatchers operating in Paraguay, regarding the sending of duplicate FPLs, especially with respect to flights departing from airports in the country in which only those issued by the ARO offices are considered valid, and they reported that they would communicate the situation to their bases. So far, it continues to receive duplicate FPLs. There are also problems of lack of FPL in some cases, especially in overflights.

Peru

2.21 It was implemented through AIC/05-2017, replaced on August 9, 2018 by AIC 09-2018 (basically updating contact data), a procedure designed to mitigate the duplication/multiplicity of regular commercial flight plans through the direct shipment of the FPL from the airlines to the single address SPIMZPZX (ARO), which has been developing quite successfully.

2.22 The ARO Office in Lima follows up on all the flight plans that enter the automated ATM system via AMHS for the implementation of electronic reports in the ARO positions, and thus detect the airlines that have errors and duplicity in the flight plans. Likewise, it carries out constant coordination with the managers of company operations of the headquarters where the flight plans originate.

2.23 In the months of August to November of 2018, training has been carried out nationwide of all personnel related to the reception procedures of FPL via AMHS/AFTN.

2.24 In October of 2018, an error reporting/duplication system of the FPL was implemented in the ARO office of the "Jorge Chávez International Airport", which information allows errors statistics to be obtained and to elaborate more complete and adequate mitigating measures.

2.25 From December 2017 to date, Letters of Agreement have been signed with 13 airlines that carry out international scheduled flights, covering 95% of these FPL, and have stopped working with RPL. In 2019 it is expected to continue the procedure with the airlines that operate domestic flights.

2.26 In March 2019, training was given to all ARO personnel in Lima in the preparation and transmission of the ACK and REJ messages. In April, ACK and REJ message transmission tests were carried out with the JetBlue and Copa Airlines companies, with successful results. For this reason, as of May 1, 2019, the use of the ACK and REJ messages has been operationally implemented with all airlines with which the FPL has received an agreement through AMHS.

2.27 The Peruvian State will implement a Flight Plan Treatment Unit for the entire FIR in order to optimize the AIDC and ATFM.

2.28 There is concern on the part of Peru and other states regarding the lack of a standard in the use of the ACK and REJ messages, which could result in problems of incompatibility in the future, if each State uses a different format. For this reason, Peru requested the Secretariat to promote the standardization of the syntax of the ACK and REJ messages.

2.29 In this sense, the Meeting formulated the following conclusion:

CONCLUSION SAM/IG/23-02 Standardization of the syntax and format of messages ACK and REJ for FPL	
<p>That: The States, through their AIM and CNS Focal Points, form a sub-working group within the INTEROP WG to:</p> <p>a) Study the existing formats of ACK and REJ messages of FPL used by the States, evaluating the advantages and disadvantages of each, and the compatibility with user systems (airlines);</p>	<p>Expected impact:</p> <p><input type="checkbox"/> Political / Global</p> <p><input checked="" type="checkbox"/> Inter-regional</p> <p><input type="checkbox"/> Economic</p>

b) Propose a regional and interregional standard to establish a unique and optimal ACK and REJ message format for FPLs.	<input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Technical/Operational
Why: To promote the standardization of the syntax of ACK and REJ messages in order to prevent incompatibility in the future.	
When: Immediately	Status: Adopted by SAM/IG/23
Who: <input checked="" type="checkbox"/> Coordinators <input checked="" type="checkbox"/> States <input checked="" type="checkbox"/> ICAO Secretariat <input type="checkbox"/> ICAO HQ <input checked="" type="checkbox"/> Other: Users/Industry	

Suriname

2.30 The FPLs are presented in physical format in the ARO offices. To date, FPL is not received directly in the Paramaribo ACC.

Uruguay

2.31 The FPL are presented both in physical format through the ARO offices, and electronically through the AFTN directly to the automated system of the ACC Montevideo. Indra made a series of corrections to the FDP and DBM of the AIRCON 2100 system, which allow a correct processing of the majority of FPL. However, FPL duplicity problems frequently occur. In this regard, it is planned to conduct a study that allows taking the necessary and appropriate measures to reduce the duplication/multiplicity of FPL.

Venezuela

2.32 It has implemented in a pre-operational mode, an automated centralized system for the treatment of flight plans of the IDS brand, which reduces errors in the presentation of the same. This system is located in the ARO Office of Maiquetía. It is expected that by the end of 2019 SAMIG/19-2 conclusion will be implemented. A manual control of the duplicities of FPL is currently carried out as a mitigating measure.

INTEROPERABILITY TASK GROUP

2.33 The Secretariat highlighted the interoperability problem that existed between systems of different manufacturers, or of the same manufacturer but of different generations or models. This was noted especially during the implementation of AMHS and AIDS in the Region.

2.34 Taking into account the number of new systems required for the automation of aeronautical information management (AIM) services, the SWIM (System Wide Information Management) concept, air traffic management (ATM), air traffic flow management (ATFM), communication, navigation and surveillance (CNS), and meteorology (MET) services, it is felt that a task force must be established to deal with the structure of the SAM Implementation Group (SAM/IG), in order to ensure the interoperability of the implemented systems.

2.35 The SAM/IG/22 meeting (Lima, Peru, 19-23 November 2018) approved Conclusion SAM/IG/22-3 on the creation of the Interoperability Task Force (Interop TF), with the main objective of ensuring the interoperability among automated systems used in the AIM, MET, ATM, ATFM, and CNS areas, within the context of the implementation of the elements designated in the SAM-PBIP.

2.36 The SAM/IG/23 Meeting urged the States to complete their list of participants to make up the Interoperability Task Force, who should be planners and implementers of systems supporting air navigation services.

2.37 Regarding the “Terms of reference of the Interoperability Task Force” presented by the Secretariat at the SAM/IG/23 meeting, Brazil noted that each State should designate its representatives to a Coordination Group tasked with defining and approving the Terms of Reference, and defining the required subgroups. The Meeting also deemed it advisable to hold a teleconference for designating a rapporteur for the Interop TF. The Secretariat shall organize a teleconference, as soon as possible, after receiving from the States nominations of the Coordination Nucleus (NC) participants.

2.38 Figure 1 presents a possible structure for the Interop TG.

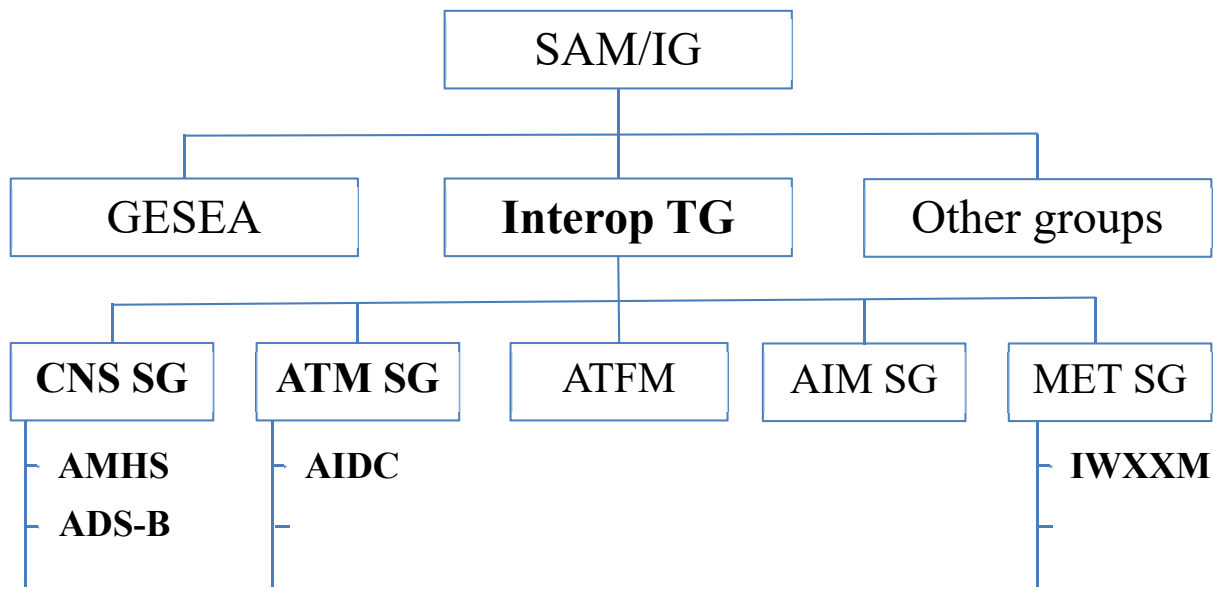


Figure 1 – Possible structure for the Interop TG

MIGRATION OF AFTN USERS TO THE AMHS ENVIRONMENT AND NEW MESSAGE FORMATS

2.39 The Aeronautical Message Service supports all air navigation services users (AIM, ATM, ATFM, COM, MET y SAR).

2.40 Currently, the Aeronautical Message Service is on transition from the former service provided by the Aeronautical Fixed Telecommunication Network (AFTN) to the services provided by the ATS Message Handling System (AMHS).

2.41 In the SAM Region, all States deployed theirs AMHS COM Centres, and many of them are operational and interconnected.

2.42 The States must plan and implement the migration of all AFTN users to the AMHS environment, as soon as possible, in order to employ the benefits provided by the AMHS environment.

2.43 All SAM Region COM Centres can interchange messages in the new format, based on XML, from a message server to another service message (between MTAs – Message Transfer Agents). The crucial point is on the users' capacity, utilizing their User Agents (UA), to deal with messages in new formats (AIXM, FIXM and IWXXM).

2.44 There are two types of users: human users and hosted users in an automated system. The human users usually make use of a terminal with an application (software) to send and receive messages. The automated users are computer system applications, that send and receive messages without assistance of a person. Figure depicts a human user using the User Agent A to send an AMHS message to the hosted user in User Agent B.

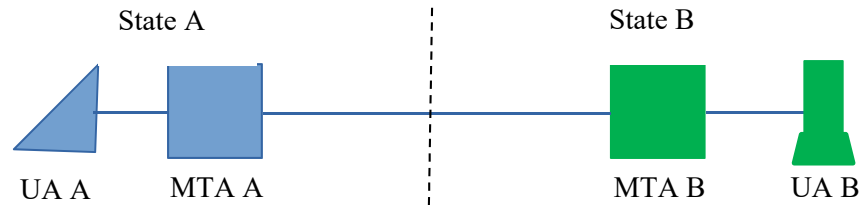


Figure 2 – Concept of the AMHS Message Service

2.45 It is possible to implement a new HMI for the users AMHS terminals to adequate to the new formats, so the user needs only to fill in boxes and the HMI will appropriately codify and transmit as an AMHS message. In same way, the recipient User Agent (human or automated) must be capable of deal with the format of the received message (in the text body part or as an attachment).

2.46 Usually, the automated User Agents must be adapted by the system provider.

3. **Suggested action:**

3.1 The Meeting is invited to:

- a) review the information contained in this working paper; and
- b) take any other action it may deem appropriate.